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Consumer's preferences for eggs attributes in Malaysia: Evidence from conjoint survey

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Abstract

As Malaysian economies grow, Malaysian per capita income is likely to increase. From economics point of view, it is expected that better-off consumers will move to better quality of food attributes such as freshness, food safety, quality and healthfulness in their food intake. This study aimed to investigate the demand for eggs attributes by Malaysian consumers. The study considers the conjoint analysis technique as a method for acquiring insights into preferences for eggs product. The technique was applied to establish the trade-offs that Malaysian consumers make between size, colour, size of packaging, functional attribute and price in the purchasing of eggs for 202 respondents. Least squares regression was utilized to estimate the relative importance of attributes for eggs. The results revealed that the ideal characteristic of egg was one with large size (grade A), omega eggs, brown, and ten per packs. We also found that consumers were also willing to pay more for their preferred attributes. The results found in the study provide valuable inputs to producers or marketers to improve their marketing efforts as well as market positioning, in line with the demanded eggs attributes.

Introduction

The food sector has contributed significantly to the growth and development of the Malaysian economy. The past decade has seen rapid structural transformation and urbanization in Malaysia, in the search for better economic and social opportunities. As a result, the demand for food has increased. Nationwide, in terms of proportion of food consumed by Malaysian consumers, the demand for wheat, vegetables, fruits, eggs, seafood products and meat has increased considerably while the importance of rice as a staple food has steadily decreased. The changes that have taken place in food consumption patterns in Malaysia over the last two decades are well documented in the literature. For instance, the role of meat products such as red meat, pork, poultry meat, eggs as well as milk in supplying protein to Malaysian consumers has increased in importance, as shown in Table 1.

In general, changes in the food consumption patterns are primarily as a result from the increase in income and changes in food prices. As the consumer income increases, so is the demand for quality and safety particularly for food products. This new awareness is related to dietary changes associated with more disposable income and urban growth. Affluent consumers move beyond meeting basic dietary needs to a keener interest in selecting food for attributes such as freshness, quality, healthfulness, and convenience. This observation is also consistent with the results found earlier by Alias *et al.* (1999), which indicated that Malaysian consumers are moving towards higher value and superior food as the per capita income increases and the level of affluence of Malaysian society rises. Moreover, with an increase in income, consumers pay greater attention to quality, as well as healthy and safe food product (Henson *et al*., 2006).

Generally, quality of food products is largely determined by individual preferences. Furst *et al.* (1996) suggested that consumers' food choices involve lots of factors such as sensory properties of the food itself, environmental, cultural and contextual influences. Prescott *et al.* (2002) also supported the idea, and the authors listed out food-related

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Table 1. Per capita consumption of meat products in Malaysia (kg/capita)

Commodity	1998	2000	2005	2006	2007	2008	2009	2010
Beef	4.1	4.8	5.3	5.5	5.5	5.4	5.5	5.6
Mutton	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.8
Pork	8.8	6.9	21.6	21.0	19.0	18.2	18.8	19.9
Poultry meat	26.8	27.3	30.1	31.1	33.2	34.4	34.7	35.0
Eggs	NA	NA	14.3	14.7	14.9	15.1	15.7	16.2
Milk	28.9	45.1	34.3	36.6	40.1	42.5	45.1	45.5

Source: Buku Perangkaan Agro-Makanan 2011, Ministry of Agriculture and Agro-Based Industry, Malaysia
Note: NA indicate that the data is not available.

expectations and attitudes, health claims, price, ethical concerns and mood as factors that influence consumers' food choice. On the other hand, Jang *et al.* (2009) concluded that food attributes are one of the most important factors that affect consumers' decision-making while purchasing food products. Recently, there has been an increasing interest in studying the demand for food attributes. However, little is known about the demand for food attributes among consumers in Malaysia.

Thus, understanding the relative importance of product attributes influencing food choice at the point of sale is important in satisfying consumer preferences and demands. These attributes will contribute, in differing proportions to the overall level of satisfaction derived from purchasing or consuming food products. This study therefore attempts to identify the relative importance and willingness to pay for eggs attributes demanded by Malaysian consumers, using conjoint analysis (CA).

Materials and Method

A considerable amount between the use of conjoint analysis and investigation of the consumers' purchasing decision has been reported in the literature (Van del Pol and Ryan, 1996; Shine *et al*., 1997; Campbell *et al*., 2004; Jan *et al*., 2007; De Souza *et al*., 2007; Ahmad Hanis *et al.*, 2012) and this contributes to support of the idea that conjoint analysis is one of the appropriate techniques to measure consumers' purchasing decision.

From a study by Guerrero *et al.* (2000), the authors discovered that choice and acceptance of food by consumers are influenced by marketing-related psychological and sensory factors. The authors mentioned that quality is considered as a key factor and can be defined in several ways. They concluded that extrinsic aspects such as package as well as price information play an important role in the process of food choice. Meanwhile, Shine *et al.* (1997) reported that quality (referring to intrinsic factors other than taste) topped the list of food attribute demand by consumers, followed by nutritional value and safety. Taste and price was ranked third and convenience and brand are considered as not preferred.

Another study by Van der Pol and Ryan (1996), applied the CA to determine attributes demanded by Scottish consumers in the purchase of fruits and vegetables. From the results of the study, they found that quality was ranked as the most important attribute. It is also interesting to note that the ideals of vegetables and fruits are cheap, good quality, loose and unpacked (unpacked for fruit) and available at the supermarket. The author also estimated the willingness to pay for the included attribute according to the income group.

Jan *et al.* (2007) have also successfully conducted a research to evaluate consumer acceptance of GM tofu by inferring the implicit values of GM (soybean source) content relative to other product attributes such as brand name and price when consumers purchase tofu in Taiwan by using CA. The findings indicated that at the aggregate level, the brand name and price appear to be the most important attributes influencing consumers' purchase of tofu. The study also pointed out that consumer demographic profiles are highly significant with market segments formed based on consumer preference for product attributes.

On the other hand, Quagrainie *et al.* (1998) have also successfully performed a study on effects of product origin and selected demographics on consumer choice of red meat by using conjoint analysis. The results suggested that the effect of product-of-Alberta is significantly stronger than the effect of product-of-Canada for high-quality beef cuts. The result of the study also indicated that consumers do not prefer to the addition of bio preservatives in packaging the fresh meat products. In terms of socio-economic factors, the authors concluded that small household sizes show a stronger preference for beef steaks compared to large families, and older people (who are over 40 years of age) purchase less meats in terms of their food expenditure.

To sum up, it can be said that conjoint analysis was considered to be a suitable method in measuring consumer preferences for eggs attributes. The next subsections will discuss the theoretical framework, steps to conduct conjoint analysis (CA) as well as data collection procedures used in the study.

Theoretical framework

The theoretical framework of this study is based on Lancaster theory of demand. Lancaster's theory argues that consumers derive utility not from goods directly but from the attributes of the goods that satisfy consumer needs and wants. CA model measures consumers' trade-offs value among multi-

attribute products or services. The model assumes that alternative product concepts can be defined as a series of specific levels of a common set of attributes. From CA model, the total utility of the consumer derives from a products is determined by the utilities contributed by each attribute level. Through CA, individuals need to make decisions between bundles of products profiles based on their budget constraints. The combination of part worth utility values for the levels of each attribute of the product can be summed to give the respondent's total utility for the products. The part worth utility estimates were formed by combinations of attributes so that the total utility for a wide range of products can be determined. In equation 1, the general form of the individual utility equation is illustrated.

$$U_j = f(X_{1j}, X_{2j}, \ldots X_{nj}; Z_1, Z_2, \ldots, Z_n; \Theta_n) + e \quad [1]$$

where

U_j represents the utility an individual acquires from product j, X_{ij} represents the ith attribute level for product j, Z_i represents the socioeconomic profile for each individual (i = 1, …, N), Θ_n represents a vector of parameter estimates for each attribute level, and e is an error term. Estimated part worth of the product attributes are called main effect variables and are represented by variables X. The following subsection will elaborate on the steps in the conduct of conjoint analysis. These include establishment of relevant attributes and levels, construction of product profiles, data collection and estimating part-worth utility.

Steps to conduct conjoint analysis

Establishing relevant attributes and level of attributes

The first task in CA study is to establish the attributes and level of attributes to include in the actual questionnaire. A focus group session was conducted to identify the important attributes for eggs product. Thirty three adult respondents of various age, gender, ethnic, and education level participated in the focus group session. The focus group discussion allows interaction between participants and the researcher. At the same time, areas of specific interest can be covered in greater depth. The aim of focus group session was both to establish the factors that influence purchasing of eggs and to gather information on the most commonly consumed eggs which are suitable for use in the CA study. Originally, there were six potential attributes of eggs identified that could be selected by consumers. The attributes were size, colour, packaging, size of packaging, functional and price. Respondents were asked to rank the six potential attributes based on their preferences. Based on the mean score for each attribute, five attributes were selected as the most important attributes for eggs, which are size, colour, size of packaging, functional and price. The list of potential attributes to be selected as well as selected attributes is as depicted in Table 2.

Table 2. Potential and selected attributes for eggs

Potential Attributes to be Selected	Potential Level of Attributes to be Selected	Selected Attributes	Selected Level of Attributes
Size	Small Medium Large	Size	Small Medium Large
Colour	Brown White	Colour	Brown White
Packaging	Unpacked Packed	Size of Packaging	30 per pack 10 per pack 6 per pack
Size of Packaging	30 per pack 10 per pack 6 per pack		
Functional	Regular eggs Omega eggs	Functional	Regular eggs Omega eggs
Price	0% increase 10% increase 20% increase 30% increase 40% increase 50% increase	Price	0% increase 10% increase 20% increase

Table 3. Profiles of egg evaluated by respondents

Profile*	Size	Functional	Colour	Size of packaging	Price
1	Large	Original eggs	Brown	10 per packs	No increase
2	Large	Original eggs	Brown	30 per packs	10% increase
3	Large	Omega eggs	White	6 per packs	No increase
4	Large	Omega eggs	White	30 per packs	20% increase
5	Small	Original eggs	Brown	30 per packs	No increase
6	Small	Original eggs	White	10 per packs	20% increase
7	Small	Original eggs	White	30 per packs	No increase
8	Small	Omega eggs	Brown	6 per packs	10% increase
9	Small	Omega eggs	Brown	30 per packs	No increase
10	Small	Omega eggs	White	10 per packs	10% increase
11	Small	Omega eggs	White	30 per packs	No increase
12	Medium	Original eggs	White	6 per packs	No increase
13	Medium	Original eggs	White	30 per packs	10% increase
14	Medium	Omega eggs	Brown	10 per packs	No increase
15	Medium	Omega eggs	Brown	30 per packs	20% increase

*Combinations of attributes for egg to be scored by respondents according to their preferences in the range one to ten (one is the least preferred, and ten is the most preferred).

Construction of eggs profiles

Once the relevant eggs attributes have been established, hypothetical eggs profiles with different combinations of attributes levels were constructed. The combinations of eggs attributes contained one level of attributes from each of the five attributes selected (size, colour, size of packaging, functional and price). Basically, the study gave rise to 108 possible profiles of eggs (3 x 2 x 3 x 2 x 3). However, it is unrealistic to ask individuals to rate the combination of attributes with too many scenarios and it also could be very tiring and time consuming. To overcome this problem, a fractional factorial design using Statistical Package for the Social Sciences (SPSS) was used to reduce the number of eggs profiles to a manageable size. The total number of egg profiles was successfully

reduced to 15 (Table 3). Respondents rated the eggs profiles in the scale of one to ten, with one being not preferred and ten being most preferred according to their preferences.

Data collection

Throughout this study, 202 respondents from the capital cities of all states in Malaysia were interviewed by using convenience sampling. The target population was adults with the age are more than 18 years old. In terms of sampling, traditional CA has no sample size requirements and could be utilized for single respondents; where the larger sample size enhances the reliability of the results and allows the researcher to make some generalizations (Hair *et al*., 1998). However, Green and Srinavasan (1978) suggested a minimum sample of 100 respondents in order to provide reliable estimates. For this study, a total of 202 respondents is considered sufficient as it meets the minimum requirement. The CA questions were then presented to respondents where respondents were asked to rate the profiles of eggs in the range of one to ten (one is the least preferred, and ten is the most preferred). Based on rating score for each eggs profile, contribution of each attribute to the respondent's preference was calculated by using conjoint analysis procedure. The contribution of the attribute level is termed as "part-worth utility". The part worth was estimated using OLS (Ordinary Least Squares) analysis.

Results and Discussion

This section presents the findings of the study. The discussion begins with descriptive analysis of the study, followed by rating score for eggs attributes, relative importance or egg attributes and willingness to pay for egg attributes, respectively.

Demographic profile of respondents

The distribution of demographic profiles of respondents is as illustrated in Table 4. Of the total respondents, 51.5% were male and 48.5% were female. The age of respondents were grouped into five categories; 18 to 30 years old, 31-40, 41-50, 51-60, and more than 60 years old. Of these, the highest group according to the age range was 41-50 years old (39.6%), followed by 18-30 years old (28.2%), 51-60 years old (16.8%), 31-40 years old (14.4%) and above 60 years old (1%). Respondents' income was grouped into six categories, below RM1,000, RM1,000-RM1,999, RM2,000-RM2,999, RM3,000-RM3,999, RM4,000-RM4,999 and more than RM4,999. About 6.9% were from below RM1,000, 21.8% from RM1,000-RM1,999, 21.8% from RM2,000-RM2,999, 17.8% from RM3,000-RM3,999, 11.4% from RM4,000-RM4,999 and 20.3% from above RM4,999. As for ethnicity, 68.8% were Malay, 11.9% were Chinese, 7.4% were Indian, 10.9% were Sabah and Sarawak Bumiputera and 1% was from other ethnics. In terms of respondents' employment, the category of employment was divided into five. The categories were; working with the government, private sector, unemployed, retired and others. About 69.3% were working with the government, 17.3% were working in private sector, 5% were unemployed, 1% was retirees and 7.4% were others. For education level, majority of respondents have at least attended secondary school (60.9%).

Table 4. Demographic profiles of respondents (%)

Demographic Factor		Percentage (n = 202)
Gender	Male	51.5
	Female	48.5
Age category (years old)	18-30	28.2
	31-40	14.4
	41-50	39.6
	51-60	16.8
	> 60	1
Income (RM)	< 1000	6.9
	1000-1999	21.8
	2000-2999	21.8
	3000– 3999	17.8
	4000-4999	11.4
	> 5000	20.3
Ethnicity	Malay	68.8
	Chinese	11.9
	Indian	7.4
	Bumiputera Sabah and Sarawak	10.9
	Others	1
Employment	Government Sector	69.3
	Private Sector	17.3
	Unemployed	5
	Retiree	1
	Others	7.4
Education	Never Been To School	1
	Primary School	3.5
	Secondary School	60.9
	University/ College	34.7

Rating score for egg profiles

The study has constructed fifteen hypothetical eggs profiles with different combinations of attributes deemed important to consumers. In the actual survey, 202 respondents were asked to rate the combination of sub-attributes accordance to their preference (between one to ten). Based on the mean score, we found that the combination of "large, original, brown, ten per packs and no increase in price" topped the list of the fifteen egg profiles (mean score = 7.85). This is followed by the combination of "large, omega, white, six per packs and no increase in price" (mean score = 7.55), "medium, omega, brown, ten per packs and no increase in price" (mean score = 7.44) and "small, original, brown, thirty per packs and no increase in price" (mean score = 7.43). The distribution of rating

Table 5. Rating score for combinations of eggs attributes

Profile	Combination of eggs attributes	Percentage per rating score										Mean score	Std. dev.
		1	2	3	4	5	6	7	8	9	10		
1	Large, Original, Brown, 10 per packs and No increase in price.	2.0	2.4	3.4	2.4	6.3	7.8	9.3	19.0	10.7	36.6	**7.85**	2.37
2	Large, Omega, White, 6 per packs and No increase in price.	2.0	3.4	2.4	5.4	10.2	5.4	11.2	16.1	12.2	31.7	**7.55**	2.47
3	Medium, Omega, Brown, 10 per packs and No increase in price.	2.0	2.9	2.9	3.4	9.8	8.8	13.7	18.5	11.7	26.3	**7.44**	2.35
4	Small, Original, Brown, 30 per packs and No increase in price.	2.0	2.4	4.4	2.9	9.8	7.8	17.1	15.1	9.8	28.8	**7.43**	2.39
5	Small, Omega, Brown, 30 per packs and No increase in price.	3.4	2.9	4.4	4.4	8.8	7.8	13.2	17.1	11.7	26.3	**7.28**	2.54
6	Small, Omega, White, 30 per packs and No increase in price.	3.4	5.4	2.4	2.9	8.8	10.7	22.0	10.2	8.3	25.9	**7.10**	2.54
7	Medium, Original, White, 6 per packs and No increase in price.	3.9	3.9	2.0	3.9	11.7	11.7	14.1	15.6	7.3	25.9	**7.10**	2.53
8	Small, Original, White, 30 per packs and No increase in price.	2.4	2.4	3.9	8.3	11.2	11.7	16.1	15.1	7.3	21.5	**6.93**	2.41
9	Large, Original, Brown, 30 per packs and Price increase 10%.	2.4	6.3	5.9	4.4	16.1	12.7	17.1	18.5	7.3	9.3	**6.33**	2.34
10	Medium, Original, White, 30 per packs and Price increase 10%.	4.9	6.3	6.3	5.9	23.9	12.7	17.6	14.1	4.4	3.9	**5.70**	2.23
11	Small, Omega, White, 10 per packs and Price increase 10%.	5.9	5.4	7.8	7.3	18.5	17.1	16.1	12.7	4.4	4.9	**5.67**	2.29
12	Large, Omega, White, 30 per packs and Price increase 20%.	7.3	5.9	5.9	11.7	18.0	13.2	15.1	9.3	7.8	5.9	**5.61**	2.45
13	Small, Omega, Brown, 6 per packs and Price increase 10%.	4.4	10.2	5.4	7.8	20.5	19.5	10.2	10.2	8.3	3.4	**5.54**	2.31
14	Small, Original, White, 10 per packs and Price increase 20%.	5.4	9.8	8.3	12.2	19.5	15.6	13.2	10.7	3.4	2.0	**5.18**	2.21
15	Medium, Omega, Brown, 30 per packs and Price increase 20%.	9.8	9.3	8.3	13.2	22.0	8.8	12.2	9.8	2.9	3.4	**4.92**	2.40

score for other profiles is as shown in Table 5.

Relative importance of attributes

This section presents the conjoint results. Briefly, the method computes the relative importance of scores for each attributes and measures consumers' trade-offs value among multi-attribute products or services. In terms of relative importance of eggs attributes, we found that size of eggs topped the list of the four attributes included in the study. As illustrated in Table 6, the relative importance of size was 70.4% compared to other attributes for eggs. The size of packaging was ranked second (21.8%), and packaging was ranked third (7.6%). It was

Table 6. Relative importance of attribute for eggs

Attributes	Level of Attributes	Coefficients	t-value	Utility	Relative
	(Constant)	7.1500***	68.5026		Importance (%)
Size	Small	-	-	-0.2919	70.39
	Medium	0.0822	0.7646	0.0343	
	Large	0.6176***	5.7445	0.2576	
Functional	Original egg	-	-	-0.0010	0.23
	Omega egg	0.0023	0.0259	0.0010	
Colour	Brown	-	-	0.0316	7.62
	White	-0.0757	-0.8439	-0.0316	
Size of Packaging	30 per packs	-	-	0.0416	21.75
	10 per packs	0.1165	1.1357	0.0486	
	6 per packs	-0.2162*	-1.7845	-0.0902	
Price	Actual Price	-0.1159***	-19.8481	-	-

Std. error = 2.3976, F = 64.8148, Adjusted R^2 = 0.127, Durbin-Watson = 1.459
Note: Significance levels are denoted by *** for 1%, ** for 5%, and * for 10%.

unexpected that functional attribute was found as the least preferred attribute by consumers as it only contributed 0.23% in terms of relative importance of attributes of eggs.

Apart from that, the results also gave information on which levels of attributes are preferred by respondents. In general, higher utility value reflects better demand for the attributes. With regard to size of eggs, large eggs, usually graded A was the most preferred (utility = 0.2576), followed by medium (grade B) with the utility = 0.0343. As expected, small eggs (grade C) was not preferred (utility = -0.2919). For the size of packaging, the utility of six per pack was -0.0902 which indicated that this level of attributes was less preferred. Both ten per pack and thirty per pack was preferred as both utility values were positive (0.0416 and 0.0486, respectively). The consistency between the size of eggs (the larger egg was better) and the size of packaging (more eggs per packaging were better) concluded that consumers preferred to buy more in terms of quantity.

As explained earlier, the study discovered that functional attributes was the least preferred attributes of eggs compared to other four attributes. The functional attributes of eggs here refers to omega eggs, which contain added vitamins E that functions as antioxidant. The fatty acids of omega eggs help sustain normal functions in the cardiovascular system and reduce cholesterol intake. It is difficult to explain this result as functional attribute seemed to be important for eggs, but it might be because consumers were not aware of the advantages of consuming omega eggs. Another possible explanation for this might be because not every shop that sells eggs, sells omega eggs. This makes omega eggs unavailable at certain places although the demand was there, and so affects the consumers' preference in buying omega eggs. However, in terms of preferences of the level of functional attributes, omega eggs were still preferred compared to regular eggs. The utility for both levels were 0.0010 and -0.0010, respectively. Another important finding was that in the context of colours, consumers preferred brown eggs more compared to white eggs. The utility for both were 0.0316 and -0.0316, respectively.

Table 7. Willingness to pay for eggs attributes

Attributes	Level of Attributes	Coefficients	$\beta_0/-\beta_{price}$	WTP* (RM/egg)	Overall WTP* (RM/egg)
Size	Small	7.1500***	0.6169	0.4851	0.4869
	Medium	7.2575	0.6261	0.4878	
	Large	7.2575***	0.6261	0.4878	
Functional	Original egg	7.1500***	0.6169	0.4851	0.4862
	Omega egg	7.2397	0.6246	0.4874	
Colour	Brown	7.1500***	0.6169	0.4851	0.4862
	White	7.2397	0.6246	0.4874	
Size of Packaging	30 per packs	7.1500***	0.6169	0.4851	0.4870
	10 per packs	7.2525	0.6257	0.4877	
	6 per packs	7.2712*	0.6273	0.4882	

Std. error = 2.3976, F = 64.8148, β_0 = 7.15, Coefficients of price = -0.1159
Note: Significance levels are denoted by *** for 1%, ** for 5%, and * for 10%.
WTP* calculated based on the current price of egg; RM0.30/ egg.

Willingness to pay

The previous results show the relative importance of eggs attributes demanded by Malaysian consumers. This section intends to give information on how much consumers are willing to pay for the demanded attributes. Willingness to pay (WTP) was calculated by using the formula stated as follows:

$$WTP = \beta_0 / -\beta_{price}$$

Where: β_0 = Coefficients value of non-price attributes for egg; β_{price} = Coefficients value of price for egg.

As in Table 7, the highest WTP of the attributes of eggs was constituted by the size of packaging, at RM0.4870 per egg, using RM0.30 as the current price of egg. The WTP for the size of eggs ranked second which is RM0.4869 per egg. This is followed by WTP for functional and the WTP for the colour of eggs, both were RM0.4862.

Although the size of packaging of eggs ranked first in the WTP, the levels of it differ from one another. The highest WTP among the level of size of packaging was six per pack, where consumers were willing to pay up to RM0.4882 per egg. Therefore, it can be said that consumers were willing to pay more for ten per pack compared to thirty per pack. The WTP for both ten per pack and thirty per pack were RM0.4877 and RM0.4851, respectively. We also found that small eggs (normally tagged as grade C eggs) received the lowest WTP in terms of size, which was RM0.4851. Meanwhile, the WTP for medium and large size eggs (normally referred to grade B and A) were RM0.4878. As for colour, consumers were willing to pay higher prices for white

eggs (RM0.4874) compared to brown eggs (0.4851). For functional attributes, the WTP for omega eggs was higher (RM0.4874) compared to original eggs (RM0.4851).

Conclusion

The primary aim of this study was to illustrate the use of CA by means of an application to eggs. By using CA, it is possible to estimate consumers' willingness to trade off one attribute for another. The trade off analysis requires consumers to express preferences by scoring attributes independently, because in many situations more of an attribute is always better. However, it is not possible for retailers and producers to satisfy such preferences by providing more of every attribute.

Based on the study, we found that the most preferred egg profile by Malaysian consumers is to be large, omega, brown and ten per packed. If a matching between supply and what consumers really need is desired, this requires a new orientation for the "consumer-oriented" market where marketers have to improve their marketing efforts to consider the demanded attributes by consumers. Excellent marketing strategies are needed in order to penetrate the "consumer-oriented" market. With increasingly rational buyers faced by abundant choices of product in market, particularly eggs products, the marketers can survive only by fine tuning the value delivery process and choosing, providing, and communicating the value.

The importance of quality in the current new supply chain setup cannot be underrated. For example, in the case of omega eggs, it is clear that there is demand from Malaysian consumers for this product. We have to find the right products for the right customers, rather than the right customers for our products. Consumers who live in rural area might not familiar with omega eggs product; therefore, the market for the omega eggs should focus on urban area, where the possibility of consumers' willingness to buy the product is higher. On the other hand, the study results also found that functional attributes for eggs were less preferred compared to the other attributes. Although it may relate to the price of the omega eggs (usually more expensive), another possible reason might be that familiarity affects the demand for omega eggs. Mass media may help promote both mentioned products to consumers since the omega eggs are very good in terms of health to consumers.

Apart from that, it is also important to note that the previous conclusion and the results of the study must be considered with some limitations of the study. One is relates to the selection of the attributes for eggs commodity. The selection of attributes and levels of attributes for eggs products are difficult to make. In this study, only selected attributes from focus group survey were used. However, it is most likely that there are other attributes of eggs products that are important to consumers beyond those considered in this study. Also, throughout the study, the effects of the demographic factors on the demand for eggs attributes were not examine. It is expected that the demand for eggs attributes may differ in terms of age groups, income or education levels of consumers. Further studies, which take these demographic profiles variables into account, will need to be undertaken.

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